

AMENDMENTS TO THE CLAIMS

1-18 (canceled)

19 (currently amended) A SAW filter comprising:

a piezoelectric substrate;~~and at least two~~

a first inter-digital transducertransducers having a first comb-shaped electrode with electrode fingers, disposed along in proximity to each other on the same surface acoustic wave propagation path on saidthe piezoelectric substrate, said first inter-digital transducer having a resonance frequency and being connected serially in a signal path;

a second inter-digital transducer having a second comb-shaped electrode with electrode fingers, disposed in proximity to said first inter-digital transducer and along the surface acoustic wave propagation path, said second inter-digital transducer being connected between the signal path and a ground, having a resonance frequency different from said resonance frequency of said first inter-digital transducer;

a first reflector electrode disposed on an outermost side of said first inter-digital transducer;

a second reflector electrode disposed on an outermost side of said second inter-digital transducer; and

a strip line electrode disposed between said first inter-digital transducer and said second inter-digital transducer so that said electrode fingers of said first inter-digital transducer, said strip line electrode, and said electrode fingers of said second inter-digital transducer are arranged almost continuously;

~~wherein at least one of the inter-digital transducers is a first inter-digital transducer connected serially to a signal path, and at least one is a second inter-digital transducer connected between the signal path and a ground;~~

~~wherein the first inter-digital transducer and the second inter-digital transducer are different in resonance frequency, and the first inter-digital transducer and the second inter-digital transducer are formed by such a configuration that electrode fingers of comb-shaped electrodes configuring inter-digital transducers are arranged almost continuously;~~

wherein an electrode finger of said electrode fingers of said~~in the~~ first inter-digital transducer; that is~~which are~~ the closest to said~~the~~ second inter-digital transducer; and an electrode finger of said electrode fingers of said~~in the~~ second inter-digital transducer; that is~~which are~~ the closest to said~~the~~ first inter-digital transducer; determine~~configure~~ peaks and troughs of surface acoustic waves along said surface acoustic surface wave propagation path, and

wherein said first comb-shaped electrode~~electrodes~~ and said second comb-shaped electrode are connected ~~in common on the side having the electrode fingers of the comb-shaped electrodes which configure the first inter-digital transducer and the second inter-digital transducer~~, and

wherein a polarity of said~~the~~ first inter-digital transducer and a polarity of said~~the~~ second inter-digital transducer fall in reversed phases from each other relative to surface acoustic waves along said surface acoustic wave propagation path, and

wherein a pitch of said electrode fingers of said strip line electrode is between a pitch of said electrode fingers of said first inter-digital transducer and a pitch of said electrode fingers of said second inter-digital transducer.

20 (currently amended) The SAW filter of Claim 19,

wherein said resonance frequency~~frequencies~~ of said~~the~~ first inter-digital transducer and said resonance frequency of said~~the~~ second inter-digital transducer are set so as to obtain~~up to frequency necessary for obtaining~~ a preset filter characteristic.

21 (currently amended) The SAW filter of Claim 20,

wherein said resonance frequency of said~~the~~ first inter-digital transducer is nearly matched with an anti-resonance frequency of said~~the~~ second inter-digital transducer.

22-24 (canceled)

25 (currently amended) The SAW filter of Claim 19,

wherein ~~at least one of said first~~the inter-digital transducer and said second inter-digital transducer includes ~~one or more~~transducers, ~~which configure the SAW filter, are of a configuration including~~ dummy electrodes.

26 (currently amended) The SAW filter of Claim 19, ~~further comprising~~wherein a third inter-digital transducer, ~~which is connected between the~~a signal path and a ground, ~~is arranged in proximity to said first inter-digital transducer and on a side of said first inter-digital transducer~~an opposite side to said~~such a side that the~~ second inter-digital transducer ~~is arranged in proximity to the first inter-digital transducer.~~

27 (currently amended) The SAW filter of Claim 26, wherein ~~a~~a resonance frequency of ~~said~~the third inter-digital transducer is different from ~~said~~a resonance frequency of ~~said~~the first inter-digital transducer.

28 (currently amended) The SAW filter of Claim 19, ~~further comprising~~wherein a fourth inter-digital transducer, ~~which is connected serially to the~~a signal path, ~~is arranged in proximity to said second inter-digital transducer and on a side of said second inter-digital transducer~~an opposite side to said~~such a side that the~~ first inter-digital transducer ~~is arranged in proximity to the second inter-digital transducer.~~

29 (currently amended) The SAW filter of Claim 28, wherein ~~a~~a resonance frequency of ~~said~~the fourth inter-digital transducer is different from ~~said~~a resonance frequency of ~~said~~the second inter-digital transducer.

30 (currently amended) A SAW filter ~~having SAW elements connected in multiple stages and using said~~configured in such a manner that the SAW filter of Claim 19 ~~is used as at least one SAW element and the elements are connected in multiple stages.~~

31 (currently amended) A SAW filter comprising:
a piezoelectric substrate;~~;~~and at least two

a first inter-digital transducertransducers having a first comb-shaped electrode with electrode fingers, disposed along a in proximity to each other on the same surface acoustic wave propagation path on saidthe piezoelectric substrate, said first inter-digital transducer having a resonant frequency and being connected serially in a signal path;

a second inter-digital transducer having a second comb-shaped electrode with electrode fingers, disposed in proximity to said first inter-digital transducer and along the surface acoustic wave propagation path, said second inter-digital transducer being connected between the signal path and a ground, having a resonant frequency different from said first inter-digital transducer;

a first reflector electrode disposed on an outermost side of said first inter-digital transducer;

a second reflector electrode disposed on an outermost side of said second inter-digital transducer; and

a strip line electrode disposed between said first inter-digital transducer and said second inter-digital transducer so that said electrode fingers of said first inter-digital transducer, said strip line electrode, and said electrode fingers of said second inter-digital transducer are arranged almost continuously;

wherein at least one of the inter-digital transducers is a first inter-digital transducer connected serially to a signal path, and at least one is a second inter-digital transducer connected between the signal path and a ground, and the first inter-digital transducer and the second inter-digital transducer are different in resonance frequency, and the first inter-digital transducer and the second inter-digital transducer are formed by such a configuration that electrode fingers of comb-shaped electrodes configuring inter-digital transducers are arranged almost continuously, and

wherein a pitch of plural-electrode fingers, which are arranged in a boundary area of saidthe first inter-digital transducer is different from a pitch of electrode fingers in a center area of said first inter-digital transducer, and

wherein a pitch of electrode fingers in a boundary area of saidthe second inter-digital transducer, is differentiated from a pitch of electrode fingers which are arranged in arespective center areaareas of said second inter-digital transducer, and

wherein a pitch of said electrode fingers of said strip line electrode is between a pitch of said electrode fingers of said first inter-digital transducer and a pitch of said electrode fingers of said second inter-digital transducer.

32 (currently amended) The SAW filter of Claim 31,

wherein weighting is applied to at least one of said first~~the~~ inter-digital transducer and said second inter-digital transducer~~transducers which configure the SAW filter.~~

33 (currently amended) The SAW filter of Claim 32,

wherein said weighting is applied using an apodized weighting method~~is applied to at least one of the inter-digital transducers which configure the SAW filter.~~

34 (currently amended) The SAW filter of Claim 32,

wherein a withdrawal weighting method is applied to at least one of said first~~the~~ inter-digital transducer and said second inter-digital transducer~~transducers which configure the SAW filter.~~

35 (currently amended) The SAW filter of Claim 31,

wherein at least one of said first~~the~~ inter-digital transducer and said second inter-digital transducer includes one or more~~transducers, which configure the SAW filter, are of a configuration including~~ dummy electrodes.

36 (currently amended) The SAW filter of Claim 31, further comprising~~wherein~~

a third inter-digital transducer, ~~which is connected between the~~ a signal path and a ground, ~~is arranged in proximity to said first inter-digital transducer and on a side of said first inter-digital transducer~~an opposite ~~said side to such a side that the second inter-digital transducer is arranged in proximity to the first inter-digital transducer.~~

37 (currently amended) The SAW filter of Claim 36,

wherein a resonance frequency of said~~the~~ third inter-digital transducer is different from said resonance frequency of said~~the~~ first inter-digital transducer.

38 (currently amended) The SAW filter of Claim 31, further comprising~~wherein~~

a fourth inter-digital transducer, ~~which is connected serially to the~~ a signal path, is arranged in proximity to said second inter-digital transducer and on a side of said second inter-digital transducer ~~an opposite said side to such a side that the first inter-digital transducer is arranged in proximity to the second inter-digital transducer.~~

39 (currently amended) The SAW filter of Claim 38,

wherein a resonance frequency of said the fourth inter-digital transducer is different from said resonance frequency of said the second inter-digital transducer.

40 (currently amended) A SAW filter having SAW elements connected in multiple stages and using said~~configured in such a manner that the SAW filter of Claim 31 is used~~ as at least one SAW element~~and the elements are connected in multiple stages.~~